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knowledge reservoir

to bring you world class
Business Information Solutions

AAPG
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Adapting Oil and Gas Data Strategies for CO2 Sequestration

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Helping You Organize Your Proprietary Business Information

Challenges for Oil and Gas Data Management

Too much time expended looking for and managing data

"Line of Sight" for management on technical field operations

Non-standard processes and information in discipline silos

Lack of consistency across organizational units and assets

Final results of many studies never captured, knowledge lost

No quality methodology for what is good or clean data

Data version control for real-time operations

No single source of the truth for validated data

No way to create a life of asset story over time

Same information duplicated in multiple places

No way to bring new people up to speed quickly

Disconnect between business and technical systems

Drivers for Managing Data

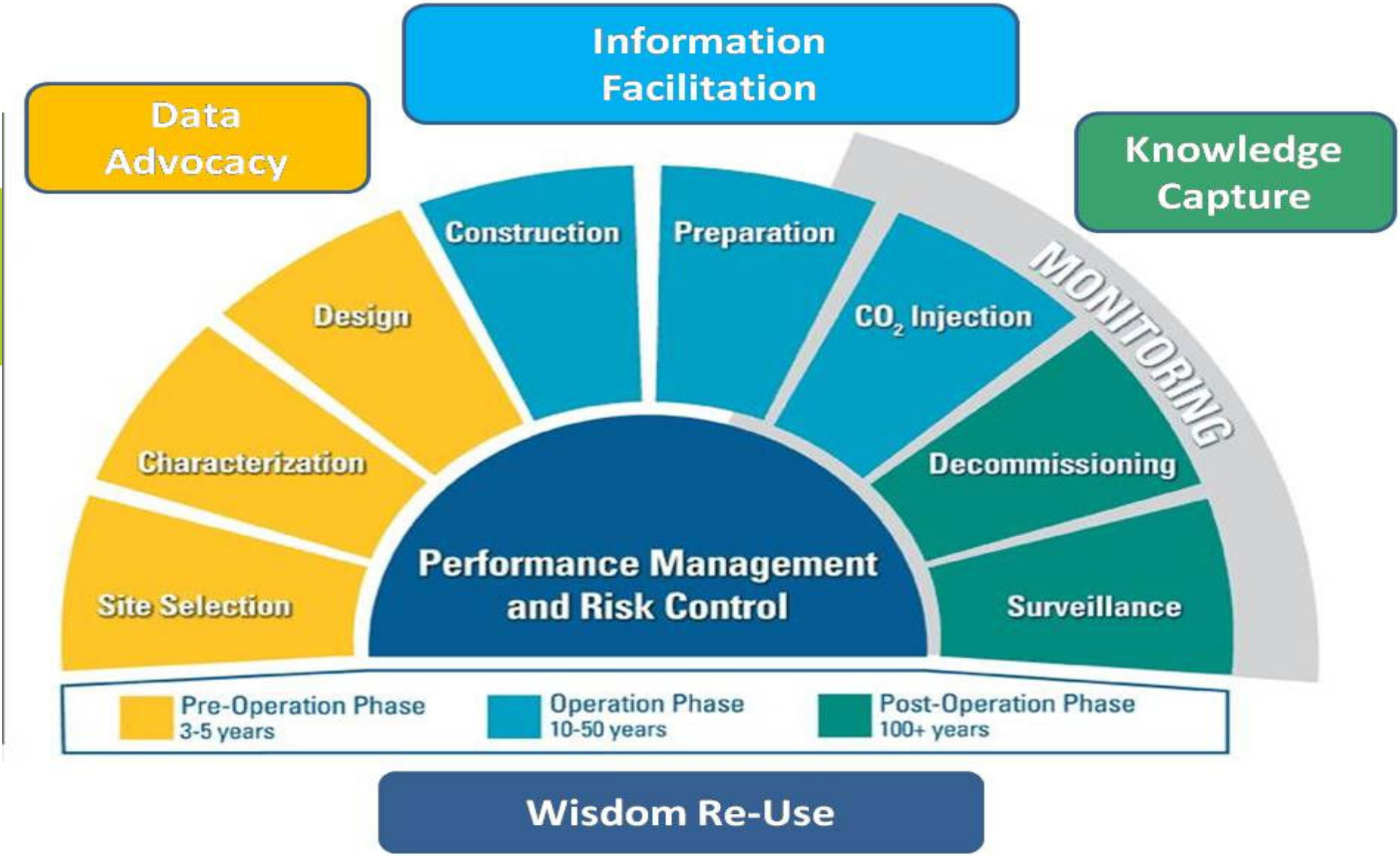
1) Financial – Decision support and risk management for site characterization, injection technology, and storage modeling.

2) Regulatory – Leverage common data delivery methodologies across multiple reporting agencies and jurisdictions.

3) Public Opinion – Provide science-based information about operations and their environmental impact

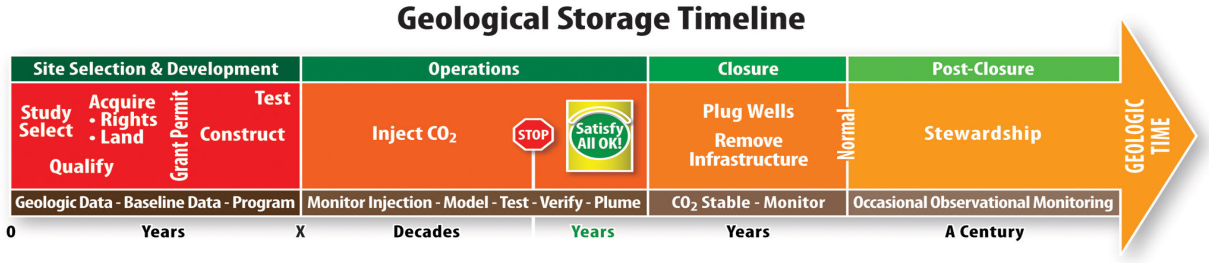
Doesn't this sound familiar?

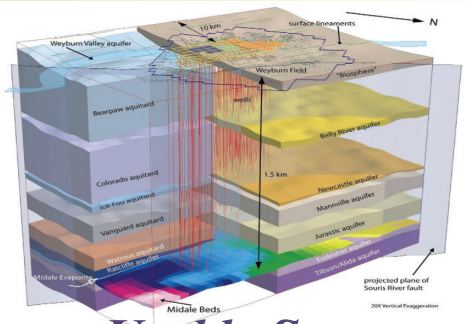
Data Management Lifecycle for CO2 Projects



The Problem:

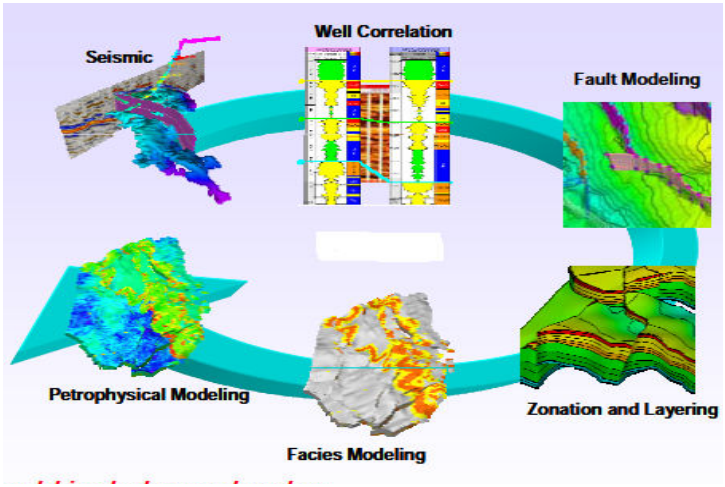
What don't we know?



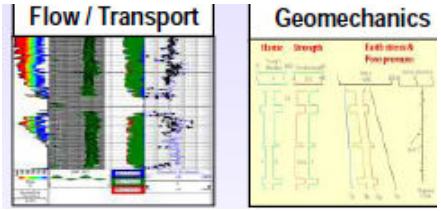


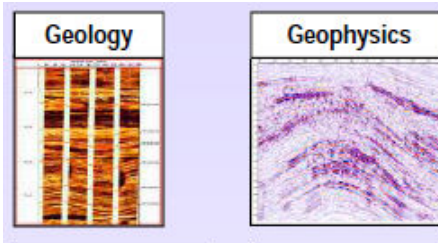
Usable Storage Capacity Volume

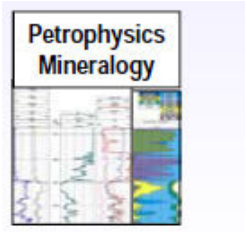
What data is required:



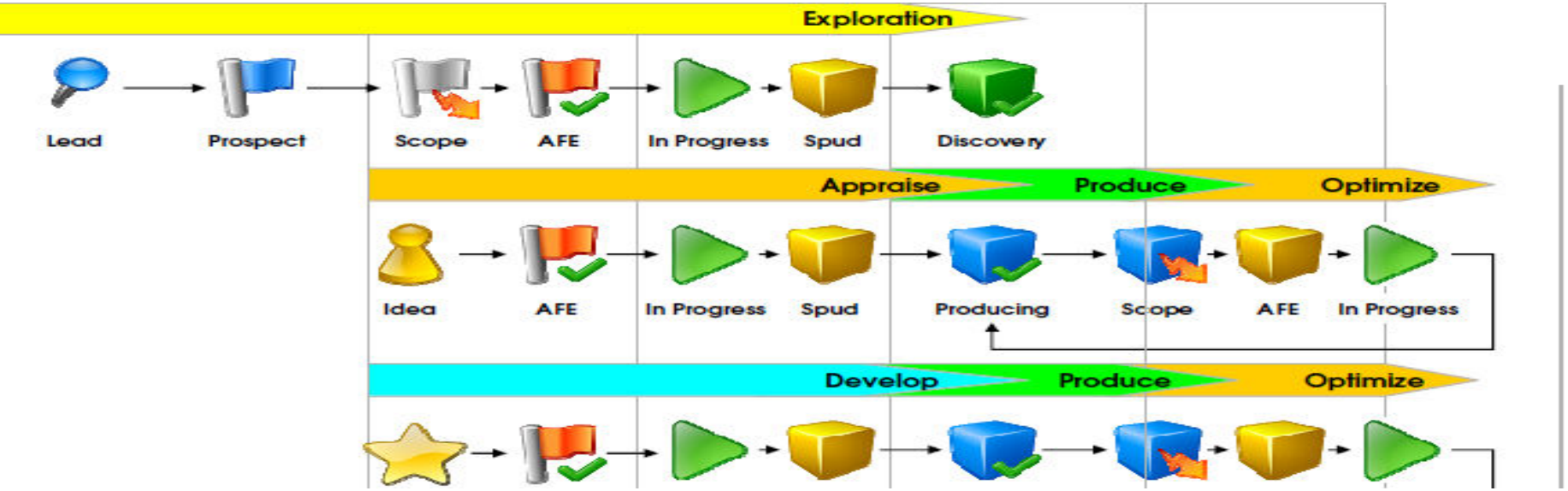
Where is the Information Stored?:

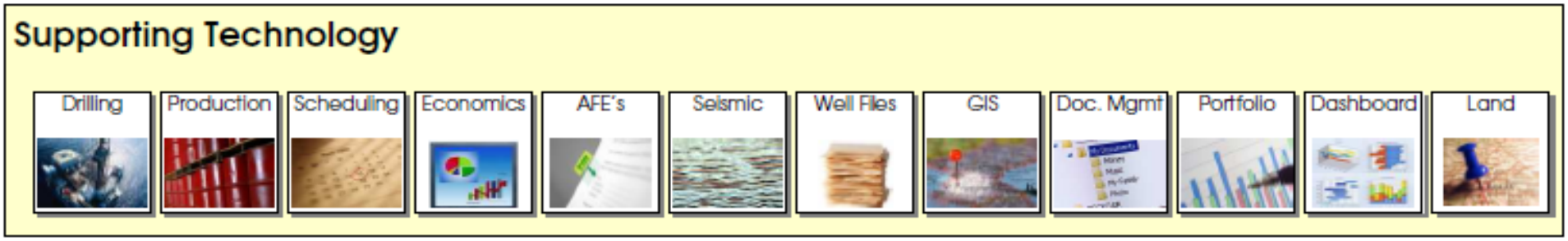




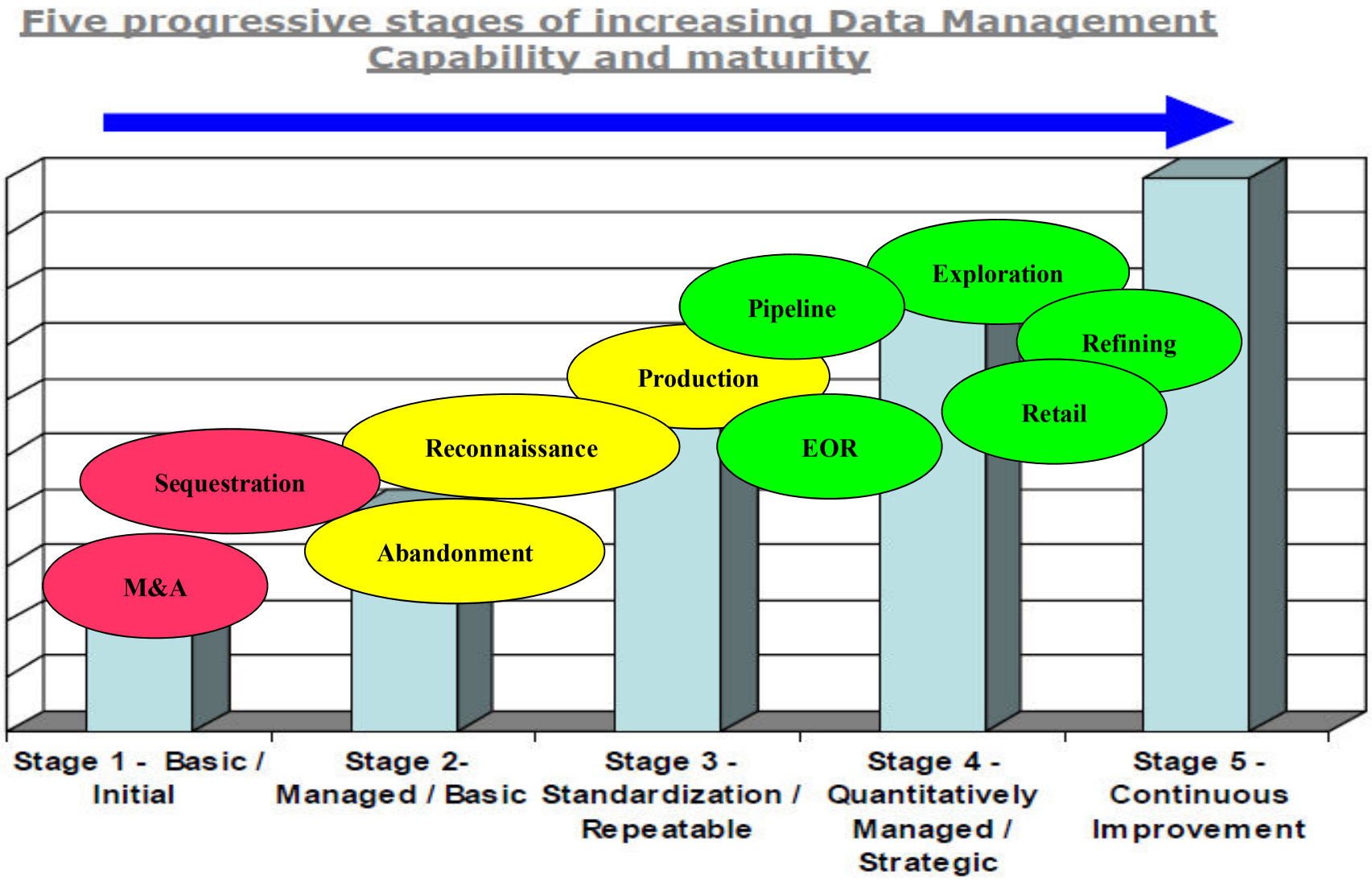


Documented Processes:

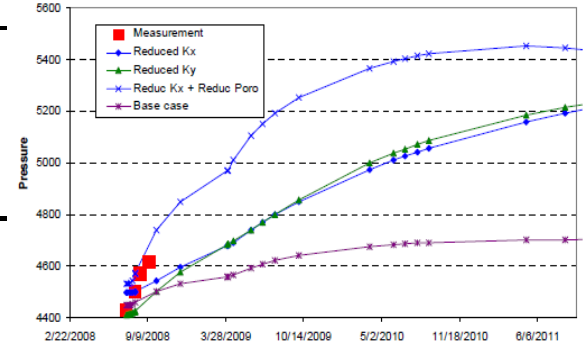
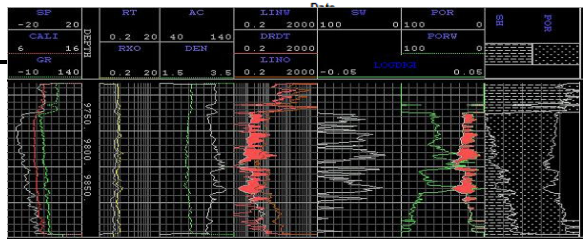
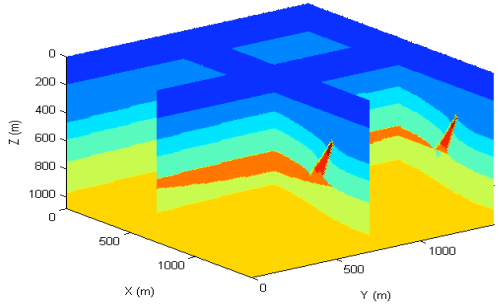
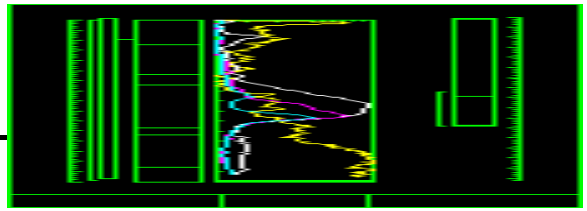




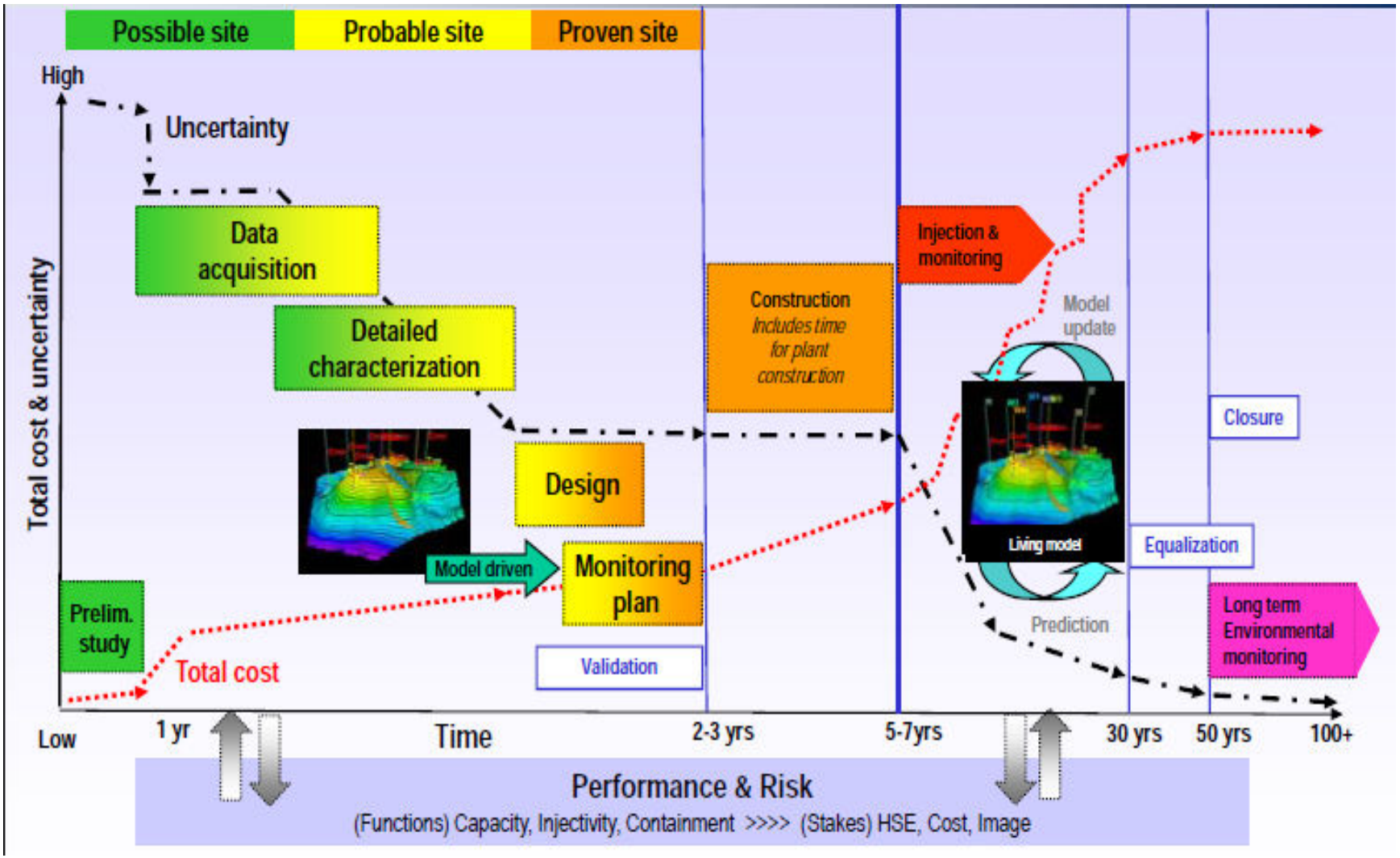
Sequestration as a Business Segment:



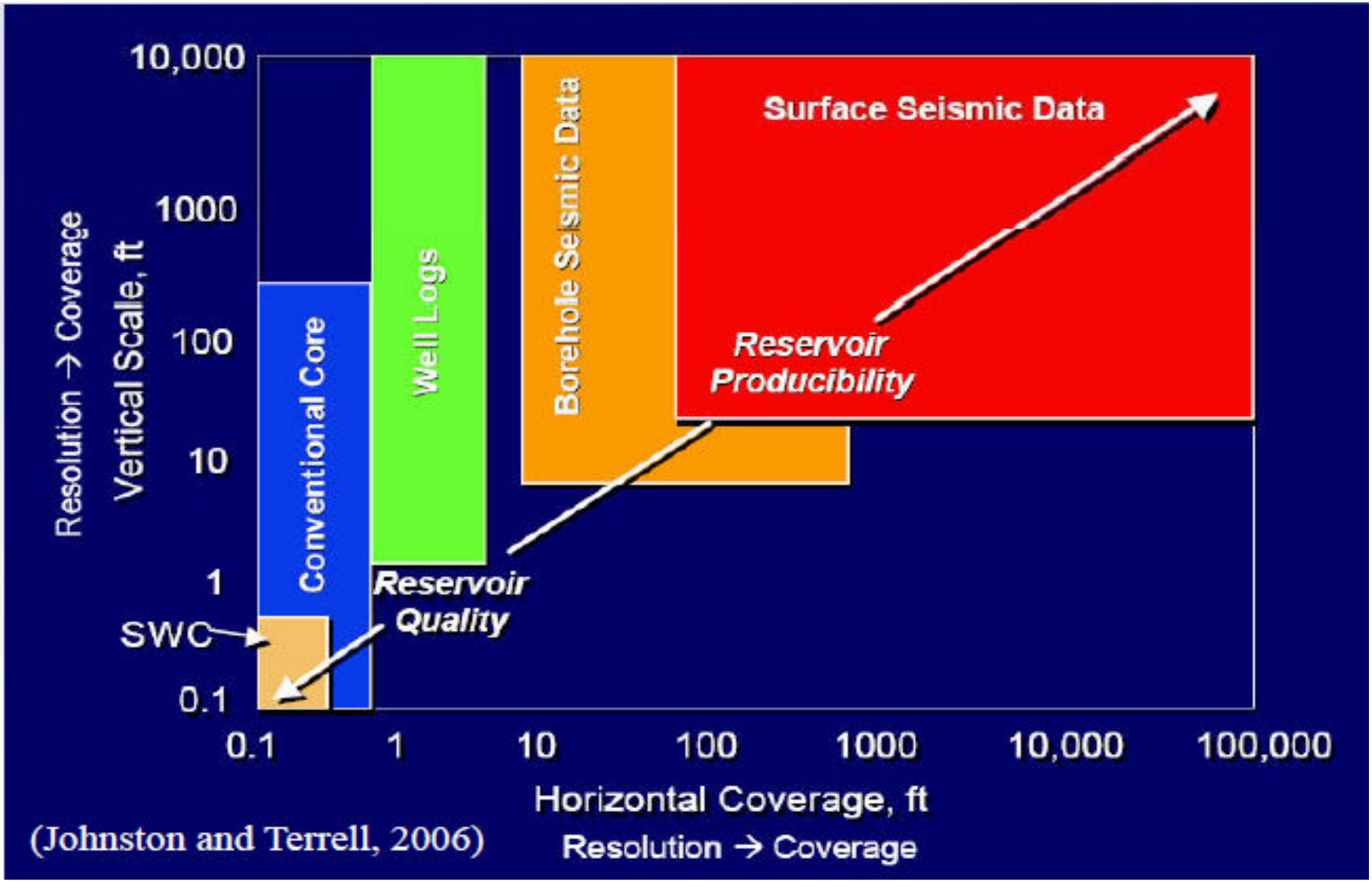
Data Volumes will Drive Adoption of Standards:

CO_2 surface flux using mobile chambers, eddy covariance, and dipole laser technique		Subsurface pressure and temperature **23 data channels / well** **8 GigaBytes /month**
Soil gas sampling		Downhole well logging **17,635 high-resolution TIFF files, volume = 553.34 GigaBytes**
Shallow groundwater composition		Vertical seismic profiling and cross well seismic imaging **168 GigaBytes / model**
Introduced (PFTs) and natural (isotopes) tracers		Electrical and electromagnetic techniques **1.2 GigaBytes / 1000 m log**

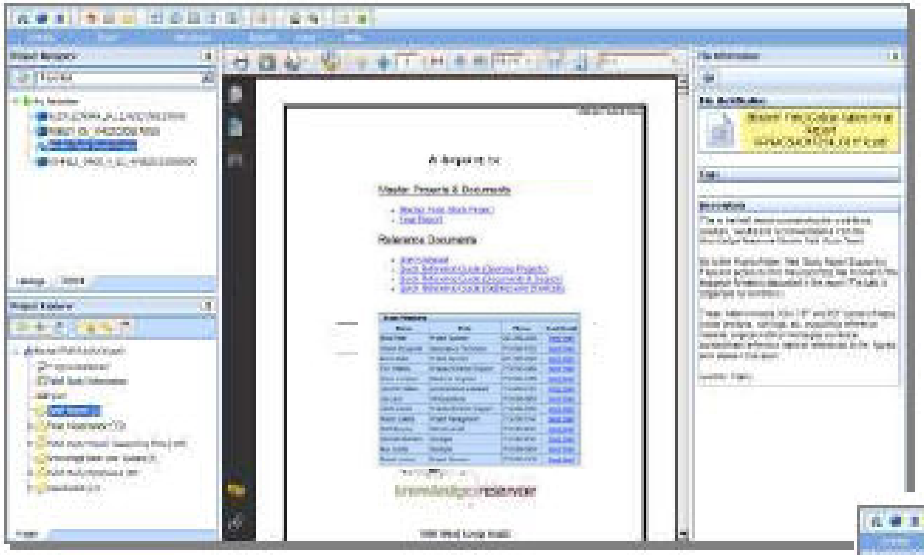
Data at Multiple Time Scales



Data at Multiple Dimensional Scales



A Case Study:

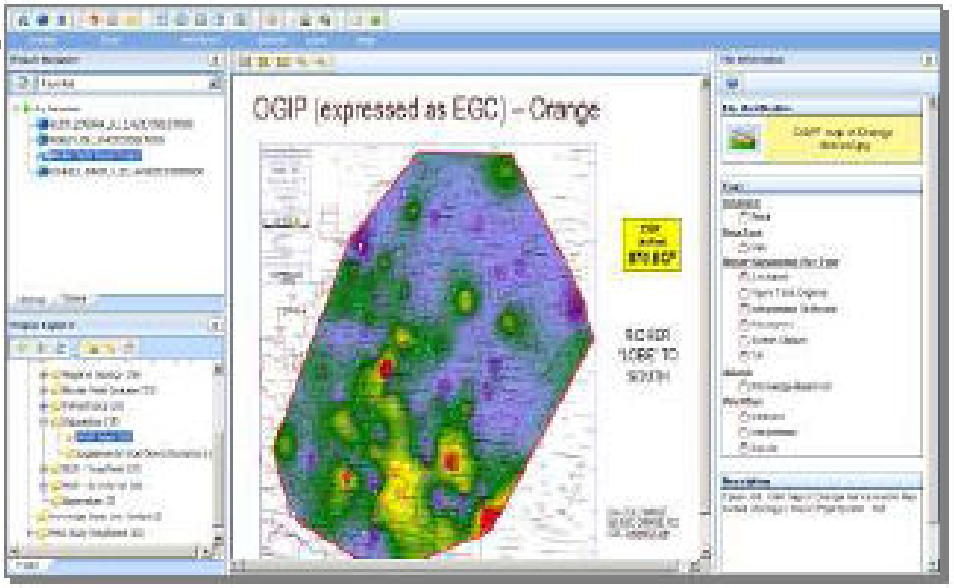


Searches by organizational hierarchy

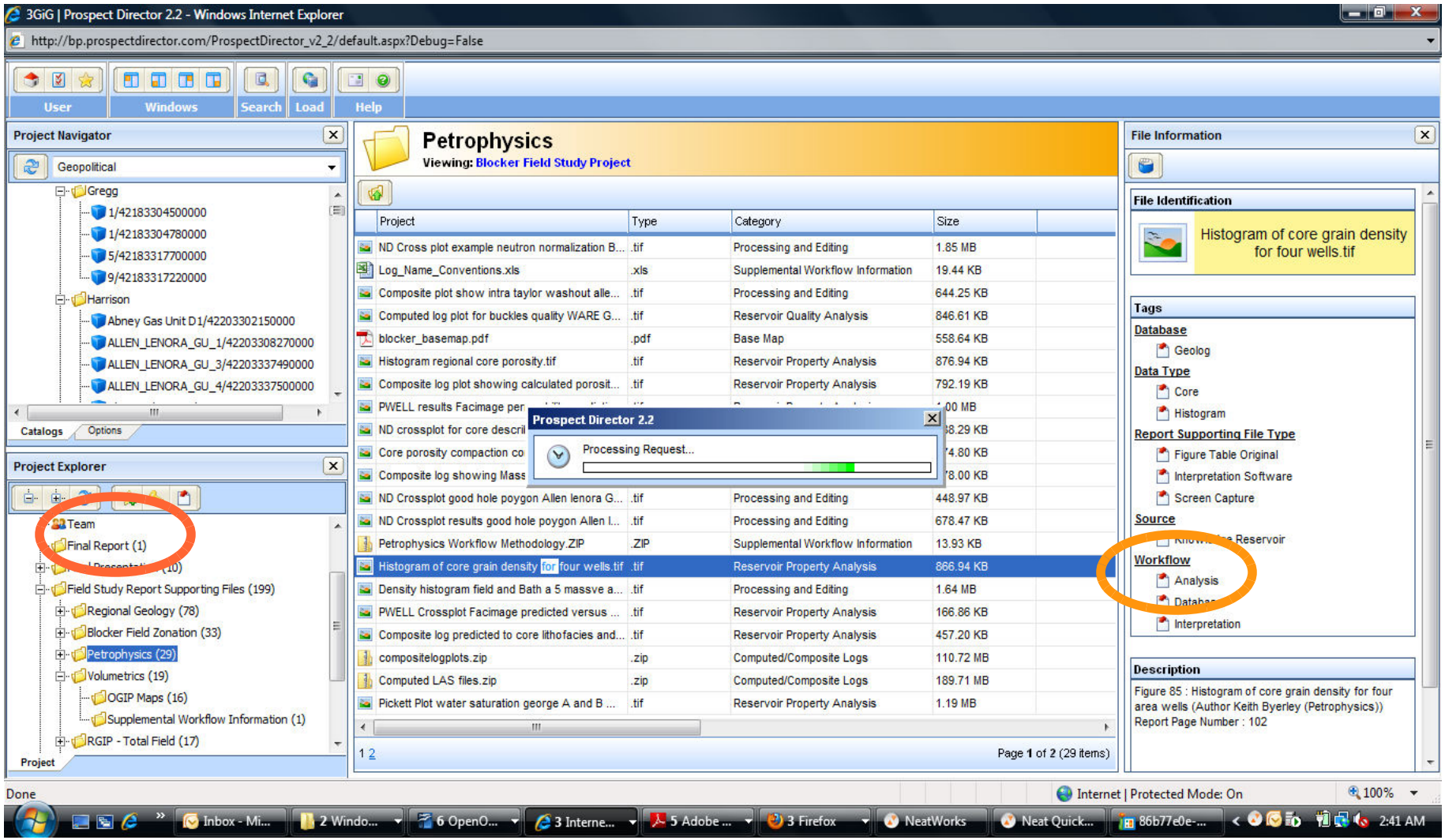
Filter by data elements used in the workflows

PPDM back end and workflow application

Inventory and delivery of field study results



A Case Study: Field Study Delivery

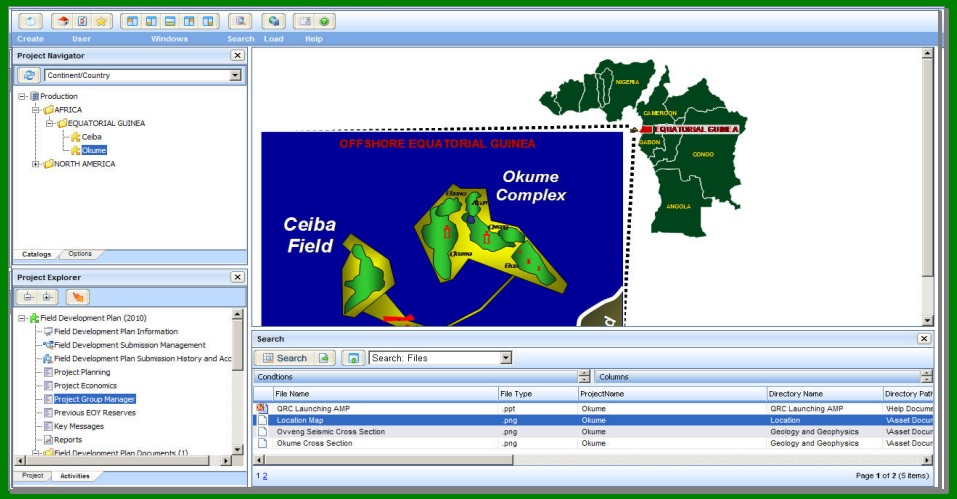


Configurable Solution Features

Designs

- Process
- Asset Projects
- Navigation Catalogs

Web User Interface



Connected Databases

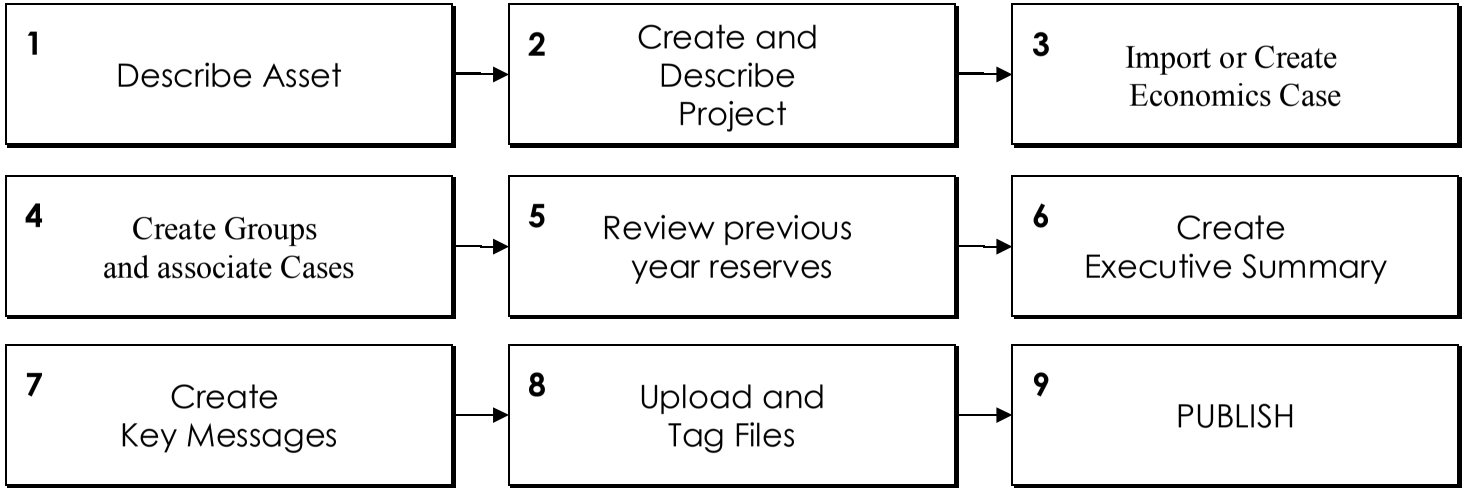
- GIS Database
- Economics TVDB
- Reserves TVDB

Master Data Stores

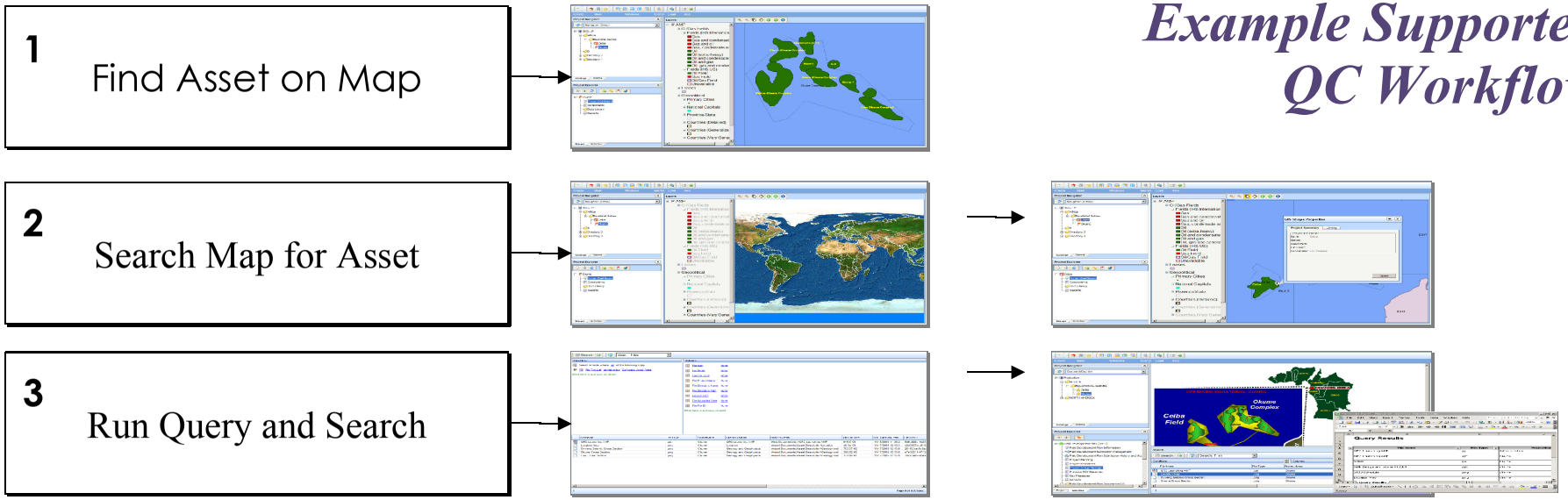
- People
- Hierarchy
- Project Tags
- File Tags
- Report Templates
- Asset Objects

Example Workflow

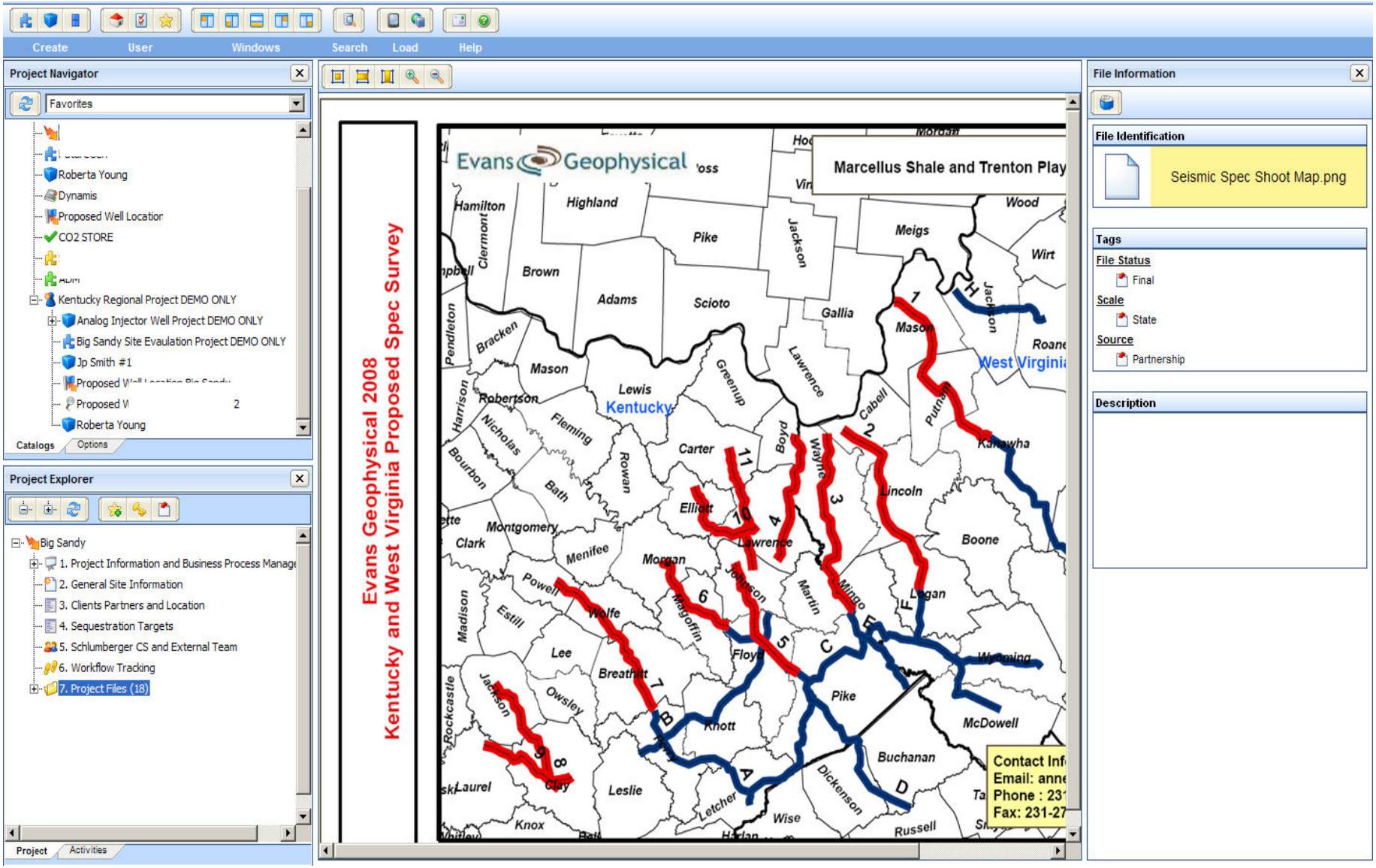
High Level Asset Team Workflow



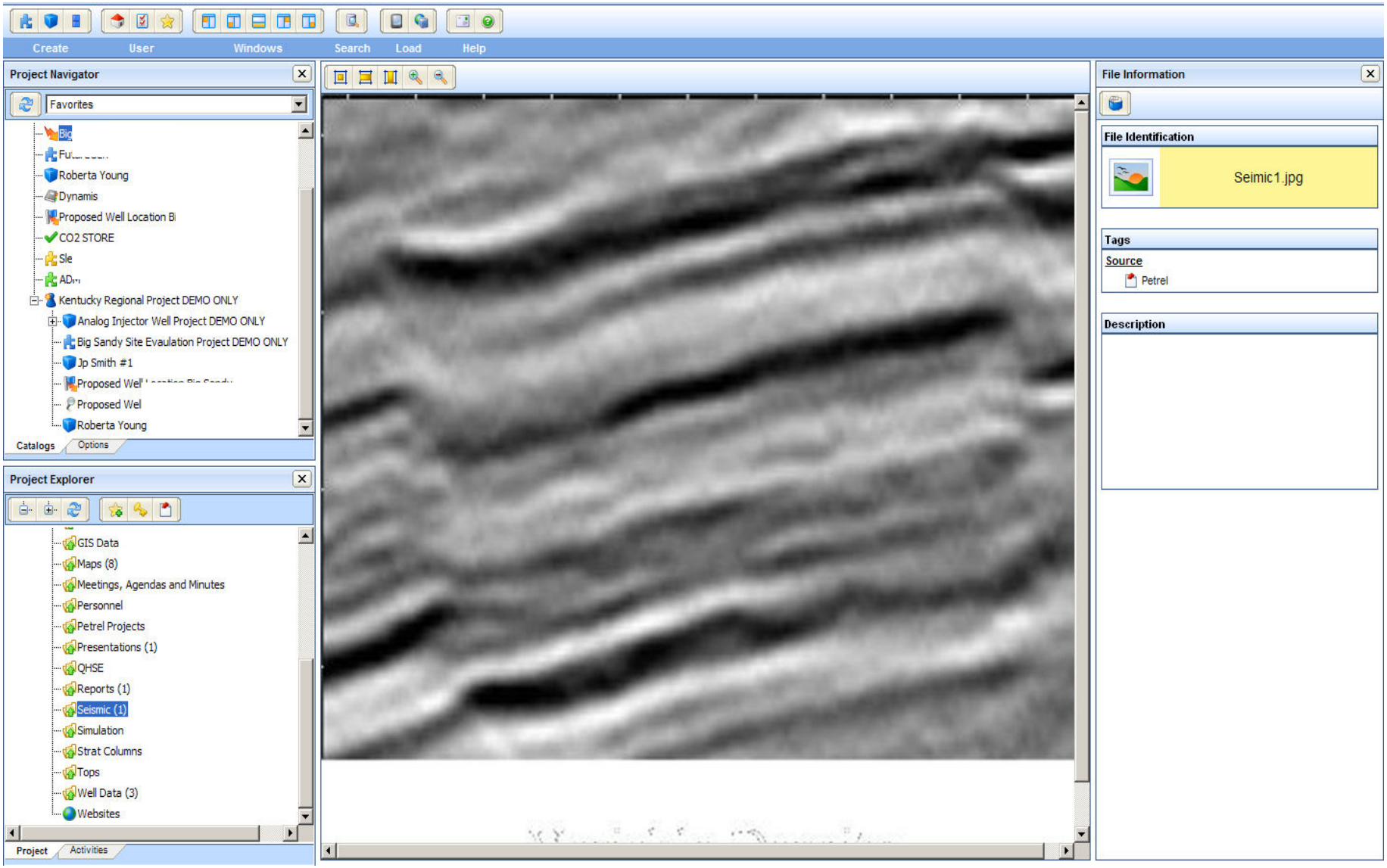
Example Supported QC Workflow



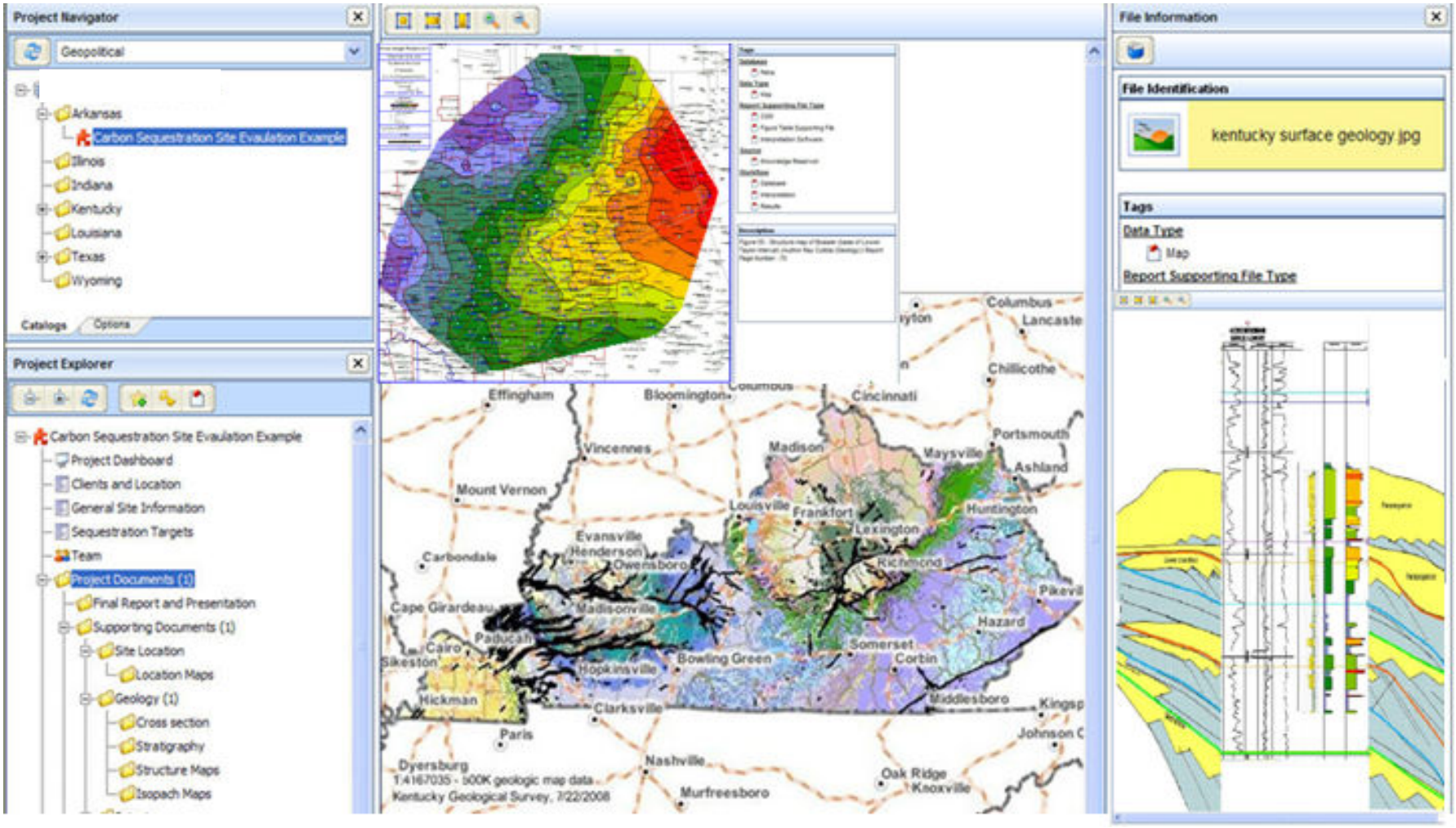
Links to Geophysical Data Locations



Case Study: Seismic Data View



The Prize: Automated Decision Support



Why use the PPDM model for CO2 Sequestration?

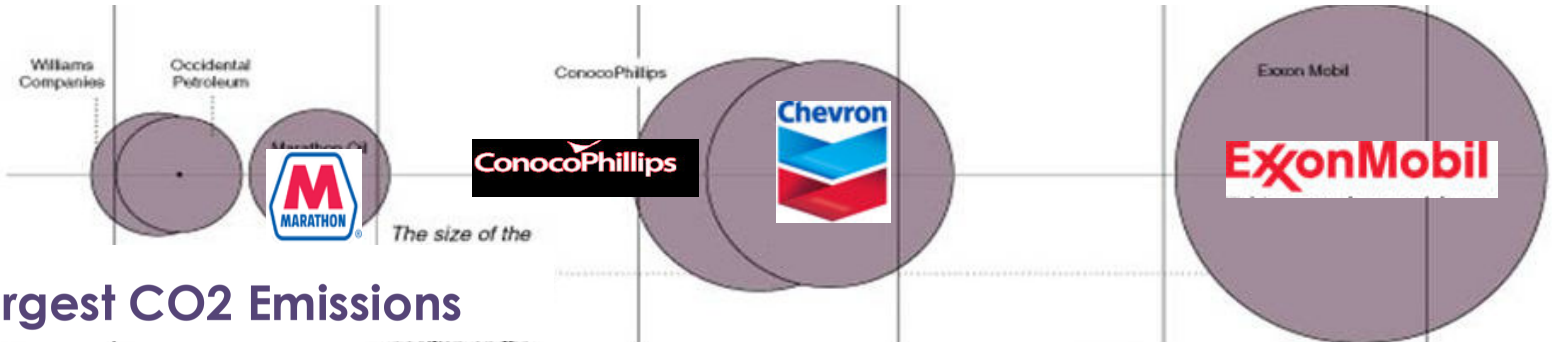
- **The data model can be complemented by proven process and document management solutions and a role-based user interface**
- **Efficient and configurable access to:**
  - Project data
  - Documents
  - Images
  - Knowledge repositories
  - Narratives
  - Personnel meta-data
  - Corporate process audit trails
  - Taxonomies
- **Repeatable and adaptable model**
- **Execution at a fraction of expense allocated for in-house development**

Industry Synergy

Oil Company Participants in Department of Energy Carbon Capture Project

Some Oil Industry Members of PPDM

Early Adopters of the PPDM Intelligent Information Management Technology



Largest CO2 Emissions